WHAT IS CLAIMED IS:

1. In an asynchronous digital subscriber line (ADSL) system comprising a central office High Speed ADSL Terminating Unit (HSTU-C) in bi-directional discrete multitone (DMT) communication with a remote High Speed ADSL Terminating Unit (HSTU-R), a method for improving handshake detection comprising:

transmitting handshake signaling from the HSTU-C to the HSTU-R via a first subset of carrier sets at a first symbol rate; and

transmitting handshake signaling from the HSTU-C to the HSTU-R via a second subset of carrier sets at a second symbol rate, the second symbol rate being less than the first symbol rate.

2. The method as in Claim 1, wherein the first symbol rate is 539.0625 symbols per second.

3. The method as in Claim 2, wherein the second symbol rate is 269.53125 symbols per second.

4. The method as in Claim 1, wherein the second symbol rate is 269.53125 symbols per second.

5. The method as in Claim 1, wherein the handshake signaling is transmitted via the second subset of carrier sets at the second symbol rate after a handshake attempt between the HSTU-C and the HSTU-R performed at the first symbol rate for both the first and second carrier sets has failed.

6. The method as in Claim 1, wherein the second subset of carrier sets includes carrier sets with noise greater than noise present in the first subset of carrier sets.

7. The method as in Claim 1, wherein the noise includes near end cross talk.

8. The method as in Claim 1, wherein the second subset of carrier sets includes carrier set C43.

9. The method as in Claim 1, wherein the second subset of carrier sets includes carrier set A43.

10. The method as in Claim 1, wherein the HSTU-C and HSTU-R are in bidirectional communication via a TCM-ISDN network.

11. The method as in Claim 1, further comprising the step of:

detecting, at the HSTU-R, a number of phase changes in a given time window of the handshake signaling transmitted by the HSTU-C via the second subset of carrier sets to identify the second symbol rate.

12. The method of Claim 11, further comprising the step of:

receiving, at the HSTU-C, at least one handshake symbol from the HSTU-R at the identified handshake symbol transmission rate.

13. The method as in Claim 11, wherein the step of detecting the number of phase changes in a given time window of the handshake signaling includes:

separating the handshake signaling transmitted by the HSTU-C into a first set of sub-symbols and a second set of sub-symbols for a given time window, the second set of sub-symbols following the first set of sub-symbols;

performing a fast fourier transform on each of the first set of sub-symbols;

performing a fast fourier transform on each of the second set of sub-symbols;

summing a result of the fast fourier transforms performed on the first set of sub-symbols;

summing a result of the fast fourier transforms performed on the second set of sub-symbols;

multiplying the summed result from the first set of sub-symbols with the summed result of the second set of sub-symbols to determine the number of phase changes in the handshake signaling within the time window.

14. The method of Claim 13, wherein the number of phase changes detected within the time window is proportional to the identified second symbol rate.

15. The method of Claim 13, wherein the second symbol rate is identified by the HSTU-R when the number of phase changes is at or above a minimum number of phase changes associated with second symbol rate.

16. In an asynchronous digital subscriber line (ADSL) system comprising a central office High Speed ADSL Terminating Unit (HSTU-C) in bi-directional discrete multitone (DMT) communication with a remote High Speed ADSL Terminating Unit (HSTU-R), a method for improving handshake detection robustness comprising:

transmitting handshake signaling via a first subset of carrier sets of a DMT transmission bandwidth between the HSTU-C and HSTU-R at a first symbol rate;

determining a presence of near end cross talk (NEXT) in a second subset of carrier sets of the DMT transmission bandwidth; and

transmitting the at least one handshake symbol via the second subset of carrier sets at a second symbol rate so that at least one sub-symbol of the at least one handshake symbol transmitted over the second subset of carrier sets is substantially unaffected by near end cross talk.

17. The method as in Claim 16, wherein the first symbol rate is 539.0625 symbols per second.

18. The method as in Claim 17, wherein the second symbol rate is 269.53125 symbols per second.

19. The method as in Claim 16, wherein the second symbol rate is 269.53125 symbols per second.

20. The method as in Claim 16, wherein the second subset of carrier sets includes carrier set C43.

21. The method as in Claim 16, wherein the second subset of carrier sets includes carrier set A43.

22. An asynchronous digital subscriber line (ADSL) system comprising:

a central office High Speed ADSL Terminating Unit (HSTU-C); and

a remote High Speed ADSL Terminating Unit (HSTU-R) in bi-directional discrete multitone (DMT) communication with the HSTU-C;

wherein the HSTU-C is adapted to:

transmit handshake signaling to the HSTU-R via a first subset of carrier sets at a first symbol rate; and

transmit handshake signaling to the HSTU-R via a second subset of carrier sets at a second symbol rate, the second rate being less than the first rate.

23. The ADSL system as in Claim 22, wherein the first symbol rate is 539.0625 symbols per second.

24. The ADSL system as in Claim 23, wherein the second symbol rate is 269.53125 symbols per second.

25. The ADSL system as in Claim 22, wherein the second symbol rate is 269.53125 symbols per second.

26. The ADSL system as in Claim 22, wherein the HSTU-C is further adapted to transmit the handshake signaling via the second subset of carrier sets at the second rate after a handshake attempt between the HSTU-C and the HSTU-R performed at the first rate for both the first and second carrier sets has failed.

27. The ADSL system as in Claim 22, wherein the second subset of carrier sets includes carrier sets with noise interference greater than noise interference present in the first subset of carrier sets.

28. The ADSL system as in Claim 22, wherein the noise interference includes near end cross talk.

29. The ADSL system as in Claim 22, wherein the second subset of carrier sets includes carrier set C43.

30. The ADSL system as in Claim 22, wherein the second subset of carrier sets includes carrier set A43.

31. The ADSL system as in Claim 22, wherein the HSTU-C and HSTU-R are in bidirectional communication via a TCM-ISDN network.

32. In an asynchronous digital subscriber line (ADSL) system comprising a central office High Speed ADSL Terminating Unit (HSTU-C) in bi-directional discrete multitone (DMT) communication with a remote High Speed ADSL Terminating Unit (HSTU-R), a method for improving handshake detection comprising:

detecting, at the HSTU-R, a number of phase changes in a given time window of a handshake signaling transmitted by the HSTU-C to identify a symbol rate of the handshake signaling.

33. The method of Claim 32, further comprising the step of:

transmitting an acknowledgement symbol from the HSTU-R to the HSTU-C at the identified symbol rate.

34. The method of Claim 32, further comprising the step of:

receiving, at the HSTU-C, at least one handshake symbol at the HSTU-R at the identified symbol rate.

35. The method as in Claim 32, wherein the step of detecting the number of phase changes in a given time window of the handshake signaling transmitted by the HSTU-C to identify a symbol rate of the handshake signaling includes:

separating the handshake signaling transmitted by the HSTU-C into a first set of sub-symbols and a second set of sub-symbols for a given time window, the second set of sub-symbols following the first set of sub-symbols;

performing a fast fourier transform on each of the first set of sub-symbols;

performing a fast fourier transform on each of the second set of sub-symbols;

summing a result of the fast fourier transforms performed on the first set of sub-symbols;

summing a result of the fast fourier transforms performed on the second set of sub-symbols;

multiplying the summed result from the first set of sub-symbols with the summed result of the second set of sub-symbols to determine the number of phase changes of the handshake signaling within the time window.

36. The method of Claim 32, wherein the number of phase changes detected within the time window is proportional to the identified symbol rate.

37. The method of Claim 32, wherein the identified symbol rate is identified by the HSTU-R when the number of phase changes is at or above a minimum number of phase changes associated with the identified symbol rate.